100° F., and on the next two it remained normal. This being the case, I now, on the afternoon of the 16th, operated.

Operation.

An incision was made in the right linea semilunaris, the outer margin of the sheath of the rectus was opened, and the muscle displaced inwards, and then the posterior layer of the sheath with the peritoneum were cut through together. The distended gall bladder immediately came forwards into the wound. Exploration with the finger showed the cystic and common ducts to be distended, and in the latter, just as it was passing behind the first part of the duodenum, was felt a stone.

Diagram giving exact size and shape of stones, showing the facets; A, junction of first and second parts of duodenum; B, common duct; C, length $\frac{3}{8}$ in., diameter, $\frac{1}{16}$ in.; D, length, 1 in., diameter, $\frac{3}{8}$ in.; E, opening of duct.

As the size of the gall bladder completely prevented convenient access to the deeper-lying structures it was brought up into the wound, packed round with gauze, and tapped, a rubber tube attached to the cannula draining off the bile and preventing any contamination of the peritoneum. The gall bladder in this manner was practically emptied, and proved to contain no stone. The bile was dark-coloured, thick, and mixed with a considerable quantity of mucus. The cannula was now withdrawn, and the small hole in the fundus was stitched over by a couple of Lembert's sutures. Careful exploration could now be made, and the following state of things was revealed. The stone in the common duct which was originally felt was situated just above where the duct passed behind the duodenum; its size distinctly stretched the duct, and the stone itself had very limited play upwards, not moving above the duodenum more than half an inch—that is, not its whole length. On palpating the second part of the duodenum another stone could be felt at the level of the termination of the duct; it seemed fixed so far that its range of movement upwards was practically nil. It was evident that the only satisfactory way of removing the lower stone was by opening the duodenum, and this I proceeded to do. Gauze was now packed around the duodenum, and below over the colon, and a vertical incision was made at the level of the common duct opening and at the junction of its anterior and right surfaces. A little mucus flowed out, but any further trouble from this was avoided by inserting gauze tampons above and below in the bowel. The lips of the wound were now held aside by small retractors, and a marked elevation was seen on the inner wall, just above the position of the papilla. On palpation this proved to be a stone, very fixed as far as its upward movement was concerned. Steadying the stone between the thumb and finger, an incision was made over its lower end, cutting through the walls of the gut and duct. Some bile escaped, and the stone presented. The latter was easily drawn out with a pair of forceps. The second stone was then pushed along the duct, seized with forceps, and withdrawn. The duodenum was closed with fine silk, a continuous suture being

used for the mucous membrane, and interrupted (Lembert) sutures for the sero-muscular coat; no stitches were put in the duct. The abdominal wall was sewn up in layers, fine silk being used for the peritoneum, fine silkworm gut for the fascia, and horsehair for the skin. A gauze drain, which had been placed on the outer side of the duodenum, was brought out at the upper angle of the wound.

The patient stood the operation very well up to the last ten minutes, when her pulse became very weak, so that it was necessary to infuse her with 2 pints of saline with 1 oz. of brandy. With this there was rapid improvement, especially when she was back in bed with hot bottles and after a hypodermic injection of strychnine.

The accompanying diagram shows the shape of the two stones and their exact size. The adjacent poles were faceted. In structure they were composed of a blackened cortex which very easily split off, while the interior consisted mainly of orange-stained cholesteroline. In removing the second stone it was definitely drawn through a narrowed part of the duct situated above the upper end of the lower stone.

After-History.

Three hours after the operation (11 p.m.) the pulse was 108 and stronger. She was allowed to moisten her mouth with warm water, and on account of pain she was given morphine hypodermically.

October 17th. At 8 a.m. her temperature was 97.8°, pulse 96. She was given a teaspoonful of milk and water, but it made her sick; she said, though, she never could take milk. Brand's essence in warm water in teaspoonfuls was substituted, with rectal feeding, both nutrient enemata and suppositories alternately. At 11 p.m. she was not so comfortable owing to slight abdominal distension. As there had been some more vomiting, the Brand's essence was stopped and only warm water given. Pulse 116, temperature 99.2°.

October 18th. No sickness during the night, and slept for about four hours. Pulse 128, temperature 100°. She complained of fullness on the left side over the colon, so at 7 a.m. an enema was given, after which a considerable quantity of flatus was passed, giving great relief and removing the distension. In the evening the wound was dressed, the gauze drain removed, and another put in. There was some tenderness around the umbilicus and over the gall bladder, but there was nothing to suggest any leakage from the intestine. Pulse 124, temperature 101°.

The urine now contains no bile. October 19th. The feeling of sickness, which was constant before the operation, is now lost, and she is able to take barley water and lemon by mouth. Pulse 120, temperature 100°. Plasmogen given and drachm doses of sulphate of magnesia three times in the day. At 10 p.m. pulse 124, temperature 100.2°. The bowels have acted three times, giving great relief. The wound was dressed again and quite clean. The abdomen was less tender except over the duodenum, and there was no distension; no vomiting during the past twelve hours.

October 20th. Pulse 120, temperature 99.6°; one action of the bowels during the night, and bile was present. Calves-foot jelly ordered but all food by mouth is distasteful; no vomiting or nausea. At 10 p.m. pulse 122, temperature 100°; one action of the bowels during the day.

October 21st. Pulse 118, temperature 98°. Wound dressed, and on removing the drain a quantity of thin, blood stained pus came away which was rather offensive; there was no trace of food in this nor any gas with it. More inclined to take food. At 11 p.m. pulse 120, temperature 99.6°. Bowels acted once during the past twenty-four hours. Soup and calves-foot jelly taken with relish.

October 22nd. Temperature 99°, pulse 100. Thin purulent discharge from the wound, but no gas. Urine is much lighter in colour and has only a slight trace of bile in it. At 8 p.m. pulse 112, temperature 100°. Rectal feeding stopped.

October 23rd. 8 a.m. temperature 98.4°. Taking plenty of food. 3 p.m. temperature 100°.

October 26th. Progress most satisfactory. Wound still discharging with slight night rises of temperature.

October 30th. Temperature normal since the 26th. November 1st. She feels very well and has a good appetite: put upon fish diet. There is very little discharge from the wound and it is quite sweet. No tenderness over abdomen.

November 15th. Wound healed. The urine and faeces are quite natural. The patient after leaving the hospital gained flesh rapidly: she felt in perfect health and had a good appetite, having entirely lost her old sensations of nausea and shivering attacks: she has now returned home to South Africa.

On perusing the descriptions of the above two cases, it will be seen that the symptoms correspond closely with the statements made in the opening remarks. The treatment adopted in both of them—removing the stone through the duodenum—was the only one possible, and the cases add two more recorded successes to the few already reported by McBurney, Mayo Robson, Page and others, of this variety of choledochotomy.

REFERENCES.

- 1 Osler, *Johns Hopkins Hospital Reports*, vol. ii, 1890; *Lancet*, May 15th, 1897.
- 2 BRITISH MEDICAL JOURNAL, 1890, vol. ii, p. 1004.

A CASE OF REMOVAL OF THE GALL BLADDER.

By F. A. SOUTHAM, M.B. Oxon., F.R.C.S. Eng.,
Surgeon to the Manchester Royal Infirmary; Professor of Clinic
Surgery, Owens College.

CHOLECYSTECTOMY, or removal of the gall bladder, is rarely performed as a primary operation, and it is only in exceptional cases that it is required as a secondary measure, the condition most commonly calling for it being the persistence

of a mucous fistula after cholecystotomy, owing to complete obstruction or obliteration of the cystic duct. In the following case it was performed as a primary operation, partly to prevent the possibility of this result, and partly to rid the patient of a diseased viscus, which henceforth was functionally useless.

The patient, a married female, aged 41 years, with a family of five children, who was seen in consultation with Dr. Case, of Brinscall, gave the following history: In a period of about four years she had suffered from occasional attacks of abdominal pain, most marked in the region of the liver, and she had several times passed gall stones in her motions. The attacks, which had been unaccompanied by jaundice, had latterly become more frequent and more severe, and her general health was in consequence becoming seriously impaired. On examination of the abdomen increased resistance was felt over the gall bladder, which was somewhat enlarged and tender upon pressure. From the history of the passage of gall stones, and the presence of a swelling in the region of the gall bladder, the case was diagnosed as one of distension of the viscus, probably due to blocking of the cystic duct by a gall stone, and an exploratory operation was advised. For this purpose she was admitted into the Manchester Royal Infirmary. On June 4th, 1901, the gall bladder was exposed by an incision in the right linea semilunaris. It was found lying under the cover of the liver, and enlarged to the size of an orange, its wall, which was much thickened and indurated, being of a dull-grey colour.

An aspirator needle was introduced, and between 3 and 4 oz. of a purulent fluid were drawn off. The gall bladder was then opened, and sixty-four calculi, many of which were two or three times the size of a pea, and distinctly faceted, were removed. On attempting to explore the cystic duct, its orifice was found to be completely obliterated, so it was decided to at once proceed to remove the gall bladder, especially as its wall, in addition to being much thickened, was very rigid—in fact, almost of cartilaginous consistence.

This was effected without much difficulty, except at several spots where it was intimately adherent to the liver, small portions of which were also removed. The cystic duct, which was followed up for some distance, and then ligatured and divided, was found to be obliterated as far as it could be traced. The division of the liver substance was attended by free oozing of blood, but this was soon arrested by sponge pressure. The external wound was then closed, except at its centre, where a gauze drain was inserted.

The patient made a good recovery from the operation; on the second day the dressings were stained with bile, the origin of which must have been the divided substance of the liver, for it continued in varying amount for several weeks, and had not entirely ceased when she left the hospital on July 18th. A few days subsequently the wound closed, and since that date it has remained firmly healed, there having been no further escape of bile. At the present time she is in excellent health, having gained considerably in weight, and kept quite free from the attacks of pain from which she had suffered previously to the operation.

THE OPERATION OF JEJUNOSTOMY, WITH A REPORT OF TWO CASES.

By B. G. A. MOYNIHAN, M.S.LOND., F.R.C.S.,

Assistant Surgeon, Leeds General Infirmary; Consulting Surgeon to the Skipton and District Hospital, and to the Mirfield Memorial Hospital.

AN artificial mouth may be made into the intestinal canal at several points—in the oesophagus, the stomach, the duodenum, and the jejunum. The operation in each of these segments of the intestinal canal has its range of usefulness—widest in the case of the stomach, most restricted in the case of the oesophagus. The operation of jejunostomy is one which, judging by the reports, or rather by the absence of reports, of cases has almost fallen into disuse among British surgeons. It is certainly one of limited applicability, but the cases in which it might prove of advantage are not so infrequent as the literature would seem to show. It is with the hope of awaking remembrance of the operation, and of describing the method I have adopted that I venture briefly to record the two following cases:

T. L., male, aged 54. Seen March 3rd, 1901, with Dr Sykes, of Cleckheaton. The symptoms were chiefly those of obstruction at the lower end of the oesophagus; a bougie passed 18 in. Hour-glass stomach with a small cardiac complement was diagnosed. On opening the abdomen the stomach was found generally infiltrated with cancer—"leather bottle stomach"—at the cardiac a deep constriction separated off a small pouch from the body of the stomach. Jejunostomy was the only operation possible. Secondary deposits were found in peritoneum and liver. Death April 9th. Food was taken by the new opening in fair quantity.

J. G. Male. Aged 73. Admitted to the infirmary under the care of Mr. Mayo Robson, for whom I acted. The symptoms pointed to cancer of the stomach and a hard rounded mass was felt in the epigastrium. The patient was so ill that I was afraid of giving an anaesthetic, but as all food, even in spoonfuls, was vomited, it was necessary to attempt to give relief. I opened the abdomen, found cancer affecting the whole stomach and large nodules in the liver and peritoneum. Jejunostomy was performed. Food was taken freely, the patient gained in weight about 4 lb., and was greatly relieved by the operation. The operation was performed on June 2nd, death took place on July 31st.

In the first case probably, and in the second certainly, life was prolonged and what is more important, was made tolerable: the agony of thirst and of starvation was banished.

The operation of jejunostomy may be performed in all these conditions necessitating the formation of an abdominal opening for the purpose of feeding the patient, when the stomach is not available. These conditions are:

INDICATIONS FOR OPERATION.

1. Extensive infiltration of the stomach with carcinoma, when there is little or no healthy stomach wall that can be utilized for the purpose of gastrostomy.
2. General cicatricial contraction of the stomach, simple in character, dependent upon the swallowing of caustic fluids.
3. Neumann has suggested that in cases of pronounced hyperchlorhydria jejunostomy should be performed in preference to gastro-enterostomy. He points out that the intensely acid secretion of the stomach passing into the jejunum through the new opening may produce ulceration which will rapidly destroy the intestinal wall and lead to perforation. This is to say a peptic ulcer of the jejunum results, in a manner precisely similar to that occurring when a peptic ulcer of the first portion of the duodenum develops. Peptic ulcer of the jejunum is recorded by Braun, Halm, Kausch, Körte, Steinthal, Hadra and Neumann, and a case has been observed by my friend Mr. W. H. Brown. In four cases the ulcer caused death by perforation, and in all there was a great excess of free hydrochloric acid.
4. Cackovics and others have suggested that in cases of persistent haematemesis, rest might be afforded to the stomach by an artificial mouth in the jejunum. In three cases of chronic haematemesis that I have dealt with by operation, I performed gastro-enterostomy, with complete success, and for such cases in the future I shall certainly advise gastro-enterostomy in preference to any other operative treatment.

MODE OF OPERATING.

Several methods have been recommended and adopted for the performance of jejunostomy; the jejunal loop has been stitched to an abdominal incision, and opened or brought up to the surface by means of a bone plate placed in its lumen. There are only two methods which are likely to survive; of these, one has been suggested by Maydl, and the other is based upon the method of Witzel for gastrostomy. It is the latter which I adopted in my two cases.

Maydl's Method.—Maydl has performed jejunostomy in 22 cases, with four deaths as the result of the operation. After opening the abdomen, the upper part of the jejunum is found, and is cut completely across. The proximal cut end is then implanted into the distal portion a few inches from its divided end, and the latter is stitched to the abdominal wall. The diagram will make the condition of things appreciable.

The method adopted in my own cases was as follows:

The abdomen was opened a little to the left of and above the umbilicus, through the rectus muscle, whose fibres were split. The duodeno-jejunal junction was sought, the jejunum traced downwards for 6 or 8 in., and a loop drawn out of the abdomen. On the side of this loop furthest from the mesentery, a small longitudinal incision was made, opening the bowel, and a piece of drainage tube about the size of a No. 12 catheter was introduced, and fixed by a single catgut stitch, which included the cut edge of the bowel and the side of the tube. The tube was then laid along the bowel upwards towards the duodeno-jejunal flexure. A continuous stitch was